## WHAT IS CLAIMED IS:

A digital projector having closed loop three color alignment comprising:

a light source;

an optical engine which splits a beam of light from said light source into first, second, and third wavelengths bands;

a first, second, and third spatial light modulator which imparts image data and first, second, and third fiducial data respectively to said first, second, and third wavelengths bands:

wherein said first, second, and third wavelengths bands are directed respectively to said first, second, and third, spatial light modulator,

a combiner which combines said modulated first, second, and third wavelengths bands;

a diverter which diverts a portion of said combined modulated wavelengths bands to at least one sensor;

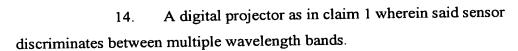
wherein said sensor senses a relative position of the each of said fiducials and sends said position information to a microprocessor;

wherein said microprocessor determines an error based on said relative position of said fiducials; and

wherein said microprocessor sends a signal to at least one component of said system to resolve said error.

- 2. A digital projector as in claim 1 wherein said fiducial data comprises a multiplicity of spatially separated fiducials.
- 3. A digital projector as in claim 1 wherein a first and a second sensors are located to capture at least two of said fiducials and said fiducials are spatially separated.
- 4. A digital projector as in claim 1 wherein said fiducial data comprises a multiplicity of pixels in a predetermined pattern.

- 5. A digital projector as in claim 1 wherein said fiducial data comprises a multiplicity of spatially separated fiducials each comprising a multiplicity of pixels in a predetermined pattern.
- 6. A digital projector as in claim 1 wherein said fiducial data for each of said first, second, and third wavelength bands is located in a same spatial position relative to said image data.
- 7. A digital projector as in claim 1 wherein said diverter diverts all of said fiducial data to said sensor.
- 8. A digital projector as in claim 1 wherein an element between said diverter and said sensor reduces an amount of light impinging on said sensor.
- 9. A digital projector as in claim 1 wherein a first sensor determines position and a second sensor detects focus.
- 10. A digital projector as in claim 1 wherein said spatial light modulators impart fiducial data to said first, second, and third wavelength bands in a predetermined sequence.
- 11. A digital projector as in claim 1 wherein said sensor collects said fiducial data from each of said first, second, and third wavelength bands in a predetermined sequence.
- 12. A digital projector as in claim 1 wherein said microprocessor determines said wavelength band by the predetermined sequence.
- 13. A digital projector as in claim 1 wherein wavelength filters are presented in a predetermined sequence in front of said sensor.



- 15. A digital projector as in claim 1 wherein said spatial light modulators are LCDs.
- 16. A digital projector as in claim 1 wherein said spatial light modulators are digital micro-mirrors.
- 17. A digital projector as in claim 1 wherein uniformizing optics are located between said light source and said optical engine.
- 18. A digital projector as in claim 1 wherein said light source is a xenon lamp.
- 19. A digital projector as in claim 1 wherein said light source is a laser.
- 20. A digital projector as in claim 1 wherein in a mask separates said fiducials from a projected image.

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A digital projector having closed loop three color alignment comprising:

a light source;

an optical engine which splits a beam of light from said light source into first, second, and third wavelengths bands;

a first, second, and third spatial light modulator which imparts image data and first, second, and third fiducial data respectively to said first, second, and third wavelengths bands:

wherein said first, second, and third wavelengths bands are directed respectively to said first, second, and third, spatial light modulator,

a combiner which combines said modulated first, second, and third wavelengths bands;

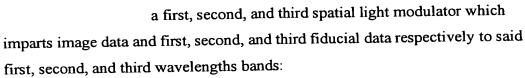
a sensor which senses a relative position of the each of said fiducials and sends said position information to a microprocessor;

wherein said microprocessor determines an error based on said relative position of said fiducials; and

wherein said microprocessor sends a signal to an actuator on at least one of said spatial light modulators to resolve said error.

- 22. A digital projector as in claim 21 wherein a mask separates said fiducials from a projected image.
- 23. A digital projector as in claim 22 wherein said mask is mounted with a heat dissipating unit.
- 24. A digital projector as in claim 22 wherein said fiducial data is imaged onto said mask and said sensor is an imaging system which collects said fiducial data from said mask.
- 25. A digital projector as in claim 21 wherein said sensor is on a mask.
- 26. A digital projector as in claim 21 wherein said sensor is comprised of a first and second sensor wherein said first and second sensors are located on corners of said mask.
- 27. A digital projector having closed loop three color alignment comprising:

a light source which produces first, second, and third wavelengths bands;



wherein said first, second, and third wavelengths bands are directed respectively to said first, second, and third, spatial light modulator,

a combiner which combines said modulated first, second, and third wavelengths bands;

a diverter which diverts a portion of said combined modulated wavelengths bands to at least one sensor;

wherein said sensor senses a relative position of the each of said fiducials and sends said position information to a microprocessor;

wherein said microprocessor determines an error based on said relative position of said fiducials; and

wherein said microprocessor sends a signal to at least one component of said system to resolve said error.

- 28. A digital projector as in claim 27 wherein said fiducial data comprises a multiplicity of spatially separated fiducials.
- 29. A digital projector as in claim 27 wherein a first and a second sensors are located to capture at least two of said fiducials and said fiducials are spatially separated.
- 30. A digital projector as in claim 27 wherein said fiducial data comprises a multiplicity of pixels in a predetermined pattern.